A.2.29 AOC 10

Description

AOC 10 is located between the south side of the PA Warehouse and the No. 5 Crude Unit in the Main Yard. This area was identified as an AOC based on several reported small volume discharges of IAF during the transfer from tanker trucks to the IAF Tank prior to 1989. Stained soil and gravel were reportedly cleaned up during the construction of the existing dike and transfer pad. The subsequent cleanup of the area and construction of the transfer and spill containment pad has left no visual evidence of staining.

As shown on Figure A.2.25 and summarized on Table A.2.25, seven soil borings, six soil samples, one monitoring well groundwater sample, and three hydropunch samples were used to characterize this AOC. In addition, relevant data from adjacent AOC 19 and PAOC investigations are also shown on Table A.2.25 for delineation purposes. Three borings (SB0181, SB0182 and SB0183) were installed during the 1st-Phase Soils Investigation to provide additional data for source characterization of AOC 10. One sample was collected from each of the borings (all from fill material within AOC 10) and analyzed for Skinner's List VOCs, SVOCs and metals. One sample (SB0182SC) was also analyzed for TPH.

Additionally, one boring (S0843/MW-149) was installed in September 2002 during the Full RFI at the approximate location shown on Figure A.2.25. A surficial sample (1.5 to 2 feet bgs), a sample from the fill material (3 to 3.5 feet bgs), and a sample from the underlying material (13.5 to 14 feet bgs) were collected from the boring. These three soil samples were analyzed for TCL VOCs and SVOCs, and TAL metals. One sample was also analyzed for SPLP metals and physical characteristics.[1]

Soils

The following table summarizes the number of samples where soil delineation criteria were exceeded within AOC 10:

Constituents of Concern	Surface Soils (0 to 2 ft)	Fill Material (>2 ft)	Native Soils	Totals
Benzene	0/2	1/3	0/1	1/6
Other VOCs	0/2	0/3	0/1	0/6
Benzo(a)pyrene	0/2	1/3	0/1	1/6
Other SVOCs	0/2	1/3	0/1	1/6
TAL Metals [a]	0/2	0/3	0/1	0/6

[a]Totals do not include naturally-occurring metal compounds in excess of the delineation criteria (Al, Ca, Fe, Mg, Mn, K and Na).

[1]Physical characteristics specified in Appendix A, Task IV of Module III of the HWSA Permit included saturated and unsaturated permeability tests, moisture content, relative permeability, bulk density, porosity, soil sorptive capacity, CEC, TOC, pH, Eh and grain size distribution.

Surface Soils (0 to 2 feet bgs)

No staining or elevated headspace readings were observed within the surface soils collected from AOC 10, and neither of the two surface soils contained any exceedances of the soil delineation criteria.

Fill Materials (>2 feet bgs)

The lithologic descriptions on the boring logs indicate that visual evidence of petroleum-related impacts (e.g., petroleum staining, odors, etc.) in the fill material was noted frequently. The thickness of the fill layer ranges from approximately six to 12.5 feet in the vicinity of AOC 10. As shown on the table above, benzene (2.4 mg/kg), benzo(a)pyrene (4.8 mg/kg), and several other SVOCs were the only COCs detected above the applicable soil delineation criteria in only one of the three subsurface fill unit soil samples (SB0182SC) from AOC 10. Naturally-occurring iron (27,800 mg/kg) was detected above the applicable soil delineation criterion in one of the other samples (S0843B3).

The SPLP sample from MW-139 (S0843B3) contained 3.87 mg/L of naturally-occurring iron, which slightly exceeds the applicable criteria for SPLP iron (3.3 mg/L)[2]. No other metals were detected above applicable SPLP criteria in this sample. Therefore, the soils are not a source of metal impacts to groundwater.

Native Material

The fill material in the vicinity of AOC 10 is generally underlain by a peat/clay layer, at depths ranging from at least six to 12 feet bgs. There was no evidence of petroleum-related impacts in the native soils. Furthermore, no exceedances of the soil delineation criteria were detected in the native soil sample (S0843G4). Therefore, the site-related soil impacts have been delineated vertically.

As discussed further in Section 6 of the RFI Report, lateral delineation of selected COCs has been completed on a site-wide basis for each Yard. The delineation of these COCs is depicted graphically on the figures provided in Section 6.

Groundwater

Recent samples collected from the monitoring well (MW-139) installed during the Full RFI contained lead (15J µg/L) above the applicable groundwater delineation criterion. VOCs and SVOCs were not detected above the delineation criteria in the October 2002 groundwater sample. Additional discussion of groundwater impacts can be found in Section 8 of the RFI report.

[2]Based on the groundwater criterion for iron (300 µg/L), DAF = 11.

Summary

In summary, benzene (2.4 mg/kg), benzo(a)pyrene (4.8 mg/kg), and several other PAHs were detected above the delineation criteria in only one soil sample from this AOC. The impacts are found within the subsurface fill layer, which also exhibits some evidence of stained soils. Therefore, institutional controls and/or engineered barriers for site-related impacted soils in the vicinity of AOC 10 will be considered in the CMS. Potential groundwater impacts in the vicinity of AOC 10 will also be give further consideration as part of the site-wide groundwater evaluation in the CMS.